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Islamic financing and bank characteristics in a dual banking system: Evidence from Malaysia

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Abstract - An understanding of financing behaviour explains the performance of Islamic banks as an alternative to the conventional finance model as suppliers of capital for businesses and entrepreneurs. In the Islamic banking system, banks are suppliers of capital and not lenders unlike that stipulated in a traditional banking system. To date, Islamic banks have become the major source of capital in Malaysia and lending behaviour is an important policy variable. In this context, the paper examines the relationship between bank financing, bank financing rate and bank-specific characteristics in a dual banking system. The evidence suggests that the bank-specific characteristics are important for Islamic banking financing behaviour. The Islamic banks' financing behaviour is consistent with behaviour of conventional banks in that the bank lending operates through banks depending on the size, and level of liquidity and capital. The findings also suggest that that there is no significant difference between Islamic bank financing and conventional bank lending behaviour with respect to interest rates.

Keywords: Islamic banks, base financing rate, bank financing, panel regression analysis

1. Introduction

An Islamic bank is a deposit-taking institution, which includes all functions currently known as banking activities. The bank mobilizes funds on the basis of mudaraba (profit-sharing) or wakalah (as an agent charging a fixed fee for managing funds), which form part of its liabilities, while financing on a profit-and-loss sharing (PLS) basis or through the purchase of goods (on cash) and sale (on credit) or other trading, leasing and manufacturing activities, form part of the assets. Apart from demand deposits, which are treated as interest-free loans from the clients to the bank and are guaranteed to be repaid in full, it plays the role of an investment manager for the owners of deposits, akin to a universal bank.

In contrast, conventional banks are understood in a generic sense as financial intermediaries. Their main task is to provide indirect finance, in contrast to direct finance through financial markets. Banks are understood to channel surplus funds from the household sector into the corporate sector facing a deficit, as they invest more than internal or direct finance. Banks play a vital role in the economy enabling more productive investment than would be possible merely on the basis of profits and financial market funds. Hence, an asymmetric information and understanding of the functioning of banks must lead to the conclusion that Islamic banks are not viable.

The distinguishing features of Islamic banks are the prohibition of charging or paying interest, the impermissibility of demanding collateral and, to a small extent, compulsory charitable spending (Khan and Mirakhor 1992). Profit has to be generated merely by primary and secondary modes of Islamic finance (Chapra 2000). Primary modes include profit-sharing arrangements such as mudaraba (partnership) and musharakah (equity participation), while secondary modes are essentially mark-up pricing or leasing arrangements.

Many scholars also argue that Islamic banking resembles conventional banking schemes. This includes the claim that the majority of Islamic lending has a debt-like character (Aggarwal and Youssef 1996). El-Gamal (2005) has concluded that Islamic finance is primarily a form of rent-seeking legal arbitrage and simply seeks to replicate the operations of conventional financial instruments. However, some researchers have argued that Islamic financial institutions have huge potential over the conventional banking model as an alternative finance to absorb macro-financial shocks and promote economic growth (Dridi and Hasan 2010; Mills and Presley 1999).

In term of deposit, Islamic banks use mainly the risk-sharing PLS instruments, while in financing, most Islamic banks rely on debt-like instruments (mark-up financing and a guaranteed profit margin) that are based on deferred obligation contracts. Moreover, conventional interest rates (the London Interbank Offered Rate (LIBOR) or a domestic equivalent) will always be a benchmark for Islamic banks' mark-up. As a result, in the case of such debt-like instruments, the pricing of Islamic financing is not a function of real economic activity but is based on a pre-determined interest rate plus a credit risk premium.

The objective of the paper is to investigate the determinants of Islamic financing while taking into consideration bank-specific characteristics. Understanding this behaviour indicates how efficiently Islamic banks perform their roles as suppliers of capital for businesses and entrepreneurs. However, little is known about the determinants of bank financing which operate alongside conventional banks in the dual banking system. Moreover, due to the fact that the rate of return on retail PLS accounts closely follows interest rates offered by conventional banks in Malaysia (Chong and Liu 2009; Cervik and Charap 2011), the paper employs a panel-pooled regression methodology by investigating the cross-sectional differences in the way that Islamic banks respond to base financing rates across bank-specific characteristics.

## 2. Overview of Malaysian Islamic financial industry

Malaysia's Islamic finance industry has been in existence for over 30 years. The enactment of the Islamic Banking Act 1983 enabled the country's first Islamic Bank to be established. Malaysia's overall strategy in the development of Islamic banking can be summarized under four pillars:

1. A full-fledged Islamic banking system operating on a parallel basis with a full-fledged conventional system (dual banking system).
2. A step-by-step approach, in the context of an overall long term strategy.
3. A comprehensive set of Islamic banking legislation and a common Shariah Supervising Council for all Islamic banking institutions.
4. A practical and open-minded approach in developing Islamic financial interests.

An important feature in the implementation of Islamic banking in Malaysia and creating a viable Islamic banking system is that three basic elements have been adopted:

1. A large number of instruments and range of different types of financial instruments must be available to meet the different needs of different investors and borrowers.
2. A large number of institutions with an adequate number of different types of institutions participating in the Islamic banking system to provide depth to the Islamic banking system.
3. An Islamic interbank market to support an efficient and effective system linking the system to the institutions and the instruments.

As it can be observed in Figure 1, the share of Islamic assets in the overall banking system is growing significantly, from around 7% in 2006 to 20% in 2012. As at the end of 2012, the country's Islamic banking system had accumulated a total of RM119 billion in assets, or about 20% of the total assets of the banking sector, which is RM0.6 trillion. To date, Malaysia has 16 Islamic Banks, which comprises nine local Islamic Banks and seven foreign Islamic Banks. Figure 2 shows the composition of the Islamic financing modes. It shows that
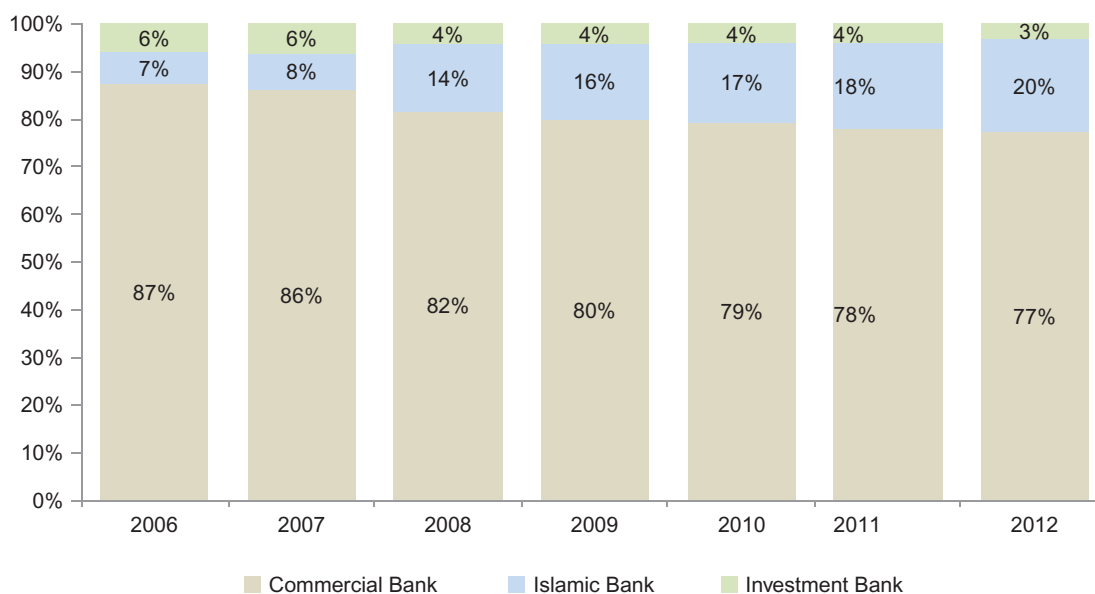
Source: Bank Negara Malaysia (2013)

**Figure 1.** Total assets: Islamic and conventional banks.
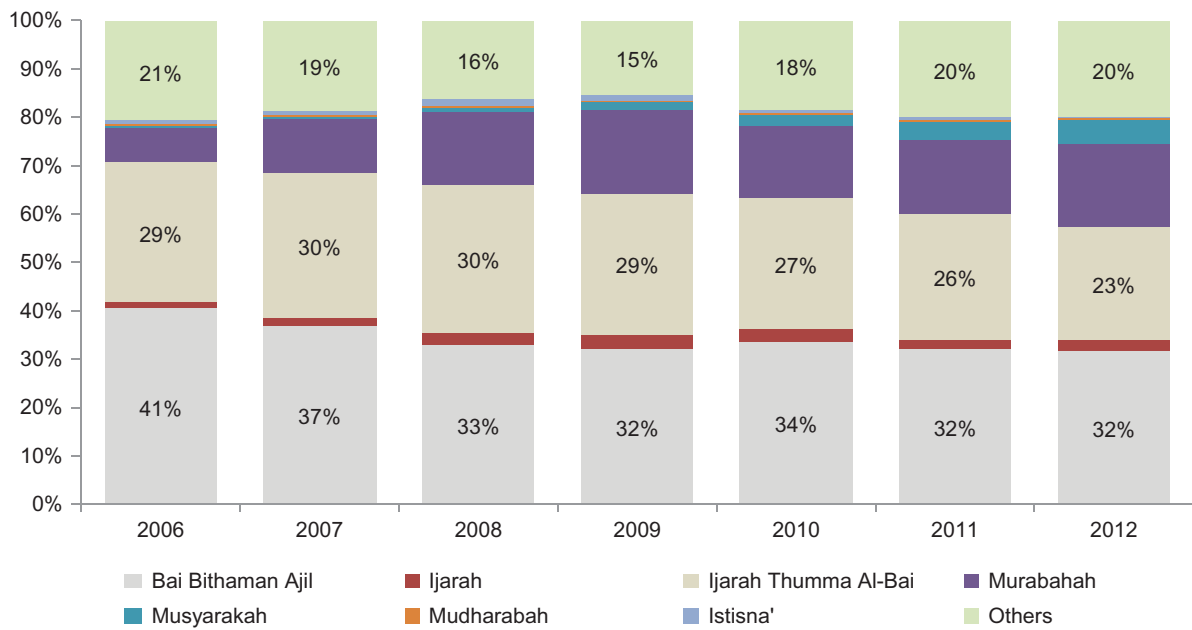
Source: Bank Negara Malaysia (2013)

Figure 2.   Composition of Islamic financing modes.

the Bai Bithaman Ajil and Ijarah Thumma Al Bai dominate the composition with 32% and 23%, respectively, over the period 2006–2012. This dominant trend of using mark-up and debt-like instruments in Islamic financing practices support some of the arguments that Islamic banking is akin to conventional banking in practical terms.

As shown in Figure 3, the data reveal a high degree of correlation between the base financing rate on retail financing and conventional lending rates on loans in Malaysia. Between 2009 and 2012, the correlation of base lending rate of conventional banks and the Islamic base financing rate was about 76 percent. Accordingly, despite the fact that conventional and Shariah-compliant Islamic banks operate in different banking environments, it is surprising that the Islamic base financing rate closely tracks interest rates offered by conventional banks in Malaysia.
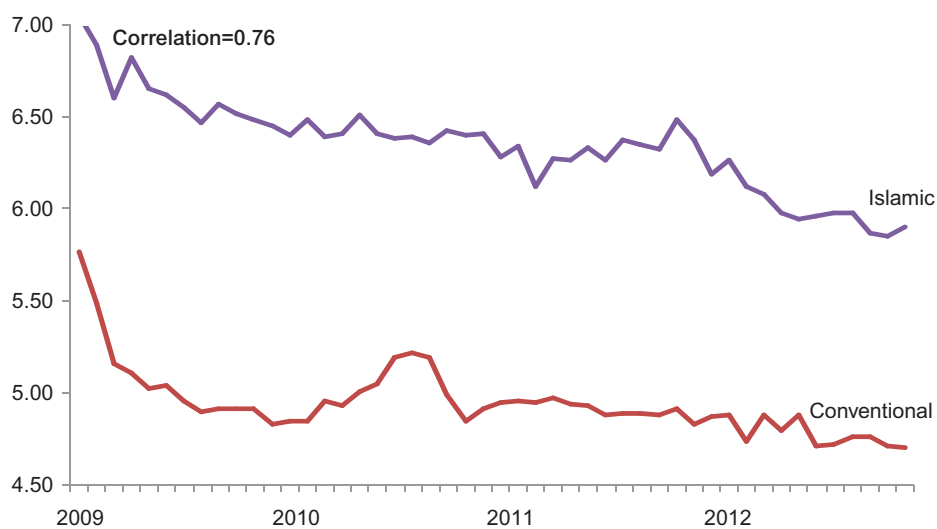
Source: Bank Negara Malaysia (2013)

Figure 3.   Islamic rate of return and conventional average lending rate.

3. Literature review

Islamic banking is different from conventional banking from a theoretical perspective because interest (riba) is prohibited in Islam (rate of return on deposits cannot be fixed by the bank and interest cannot be charged on loans). The prohibition of interest is combined with the common belief that banks channel funds towards productive investment, which makes Islamic banking and Western economic theory inconsistent with each other. A unique feature of Islamic banking is the PLS paradigm, which is largely based on the mudaraba (profit-sharing) and musharakah (equity participation) concepts of Islamic contracting.

The concepts of Islamic finance in using the rate of returns as a replacement for interest can be divided into two strands of argument. The idealist literature attempts to look at the key concepts of Islamic finance such as PLS, money, interest and profit from an ideal perspective. A pre-determined return to the lender, dependent on the borrowing period and independent of the borrower's uncertainty, is not permissible under Islamic banking. This means that the ideal and most 'Islamic' form of each concept should be accepted as valid. Much of the literature on Islamic banking and finance in the 1960s and the theoretical studies on Islamic banking fall under this category.

Another line of argument based on maslaha-oriented literature would be at the extreme end of the continuum. According to this view, riba should not be interpreted in a simplistic fashion as modem bank interest. Any interest-based bank could theoretically be an Islamic bank provided that the Islamic ideals of justice, equity, fairness, non-exploitation were its guiding principles; humane terms of providing finance to those 'needing' them were practised; and, it provided one way of helping the economically disadvantaged classes of society to raise their standard of living. Nonetheless, it can be seen from this that there has been a gradual shift from the idealist position to a more pragmatic, mark-up based and less risky version.

In the conventional literature, the interest rate has long been recognized not only by classical and neo-classical economists, but also by contemporary economists as one of the factors that determine the level of savings in the economy, and that the interest rate has a positive relationship with savings. However, Haron (2001) found similar positive relationship behaviour for the profit rate declared by Islamic banks. In other words, Islamic bank customers are guided by the profit maximization theory since there is no pre-determined rate of return involved in the Islamic banking system. Since depositors at Islamic banks possess similar attitudes to those at the conventional banks, the interest rate will continue to have an influence on the operations of Islamic banks.

On a similar note, while funding activities are carried out mainly through the participatory PLS model, it is well-established in the literature that Islamic banks follow their conventional counterparts in creating assets through non-PLS, debt-like instruments with a pre-determined, fixed rate of return; in line with the findings of Beck et al. (2010), there are "few significant differences in business orientation, efficiency, asset quality or stability" between conventional and retail Islamic banks. As a result, given the implicit link to interest rates on the asset side of the balance sheet, PLS rates of return follow conventional bank deposit rates.

More recent literature on Islamic finance tries to establish the difference between Islamic rates of return and conventional banks interest rates based on empirical assessments. Cervik and Charap (2011) compare the empirical behaviour of conventional bank deposit rates and the rate of returns on retail Islamic PLS investment accounts in Malaysia and Turkey. The findings show that conventional bank deposit rates and PLS rate of returns exhibit co-integration in the long-run, and that conventional bank deposit rates cause returns on PLS accounts. Moreover, the time-varying volatility of conventional bank deposit rates and PLS returns is correlated and is statistically significant.

Such correlations have been observed in other studies. In the case of Malaysia, Chong and Liu (2009), for example, find that retail Islamic deposit rates mimic the behaviour of conventional interest rates. The study shows that only a small portion of Islamic bank financing is strictly PLS-based, and that Islamic deposits are not interest-free, but are very much pegged to conventional deposits. The findings also suggest that the Islamic resurgence worldwide drives the rapid growth in Islamic banking rather than the advantages of the PLS paradigm, implying that regulations similar to those of conventional banks should be applied for the Islamic bank.

Similarly, Kasri and Kassim (2009) examined the relationship between investment deposits and rate of return, including interest rate for Islamic banks in Indonesia over the period 2000 to 2007. Using a vector autoregressive model (VAR) model, the study reveals that the mudaraba investment deposit in the Islamic banks are co-integrated with return of the Islamic deposit, interest rate of the conventional banks' deposit, number of Islamic banks' branches, and national income in the long-run. The finding also suggests that rate of return and interest rate move in tandem, indicating that Islamic banks in Indonesia are exposed to benchmark risk and rate of return risk.

In practice, the main explanation of the similarity between Islamic bank profit rate and conventional banks can be attributed to the differences in perceptions of riskiness (theoretically and practically) at the institutional and systemic level, particularly on the asset side. In addition, Islamic banks lose on the grounds of liquidity, assets and liabilities concentrations and operational efficiency, whereas they tend to win in the field of profitability. Nevertheless, Islamic banking could provide a further guarantee, albeit still marginal, against systemic risks in certain emerging financial markets.

4. Data and estimation methodology

The study employs a panel of annual bank level data of all Islamic banks operating in the Malaysia covering the period 2006–2012. The financial statements of Islamic banks operating in Malaysian Islamic banking sectors are collected from the Bankscope database of Bureau van Dijk's company. The macroeconomic variables: consumer price index, real gross domestic product, Islamic base financing rate, and monetary policy rate are taken from various issues of Quarterly Statistical Bulletin published by Central Bank of Malaysia.

Table 1 reports the basic descriptive statistics for the sample:

Table 1. Descriptive statistics.

Variable	# of Obs.	Mean	Std. Dev.	Min	Max
Financing	69	14.15	1.28	7.41	16.57
Assets	71	14.91	0.95	11.83	16.96
Liquidity	70	0.08	0.04	−0.02	0.20
Capital	66	0.09	0.04	−0.02	0.24
GDP	119	20.32	0.08	20.17	20.42
Base Financing Rate	119	4.60	0.05	4.51	4.66
Overnight Rate	119	2.92	0.46	2.00	3.50
Prices	119	3.29	0.24	2.93	3.70

Note: Financing, Assets, GDP and Prices are in logarithmic forms; Liquidity is defined as a ratio of liquid assets (cash and short-term funds) to total assets; Capital is defined as ratio of capital and reserve to total assets.
Source: Author's own computation from Bankscope.

Using a panel of information for 17 individual banks, we initially estimate the benchmark model for Islamic bank financing to allow for asymmetric response to bank characteristics and monetary policy. This has usually been done by introducing interaction terms between Islamic base financing rate and bank discriminatory variables. Beside these variables, we control for economic activities and consumer prices, which allow us to control for demand-side effects on Islamic bank financing. By combining time series of cross-sectional observation, panel data give more informative data, more variability, less co-linearity among the variables, more degrees of freedom and more efficiency (Gujarati and Sangeetha 2007). The panel-data estimation method of both pooled-regression and fixed-effect model is preferred. Fixed-effects specification is mainly used to account for time-invariant unobservable heterogeneity that is potentially correlated with the dependent variable. To test for estimation robustness of the models, we employ random-effect estimations and use all diagnostic tests to validate the models. Our baseline model specification is as follows:

$$\Delta FIN_{it} = \mu_i + \sum_{j=1}^{l} \beta_j \Delta BFR_{t-j} + \gamma_0 SIZE_{it-1} + \omega_0 LIQUIDITY_{it-1}$$

$$+ \varphi_0 CAPITAL_{it-1} + \sum_{j=1}^{l} \gamma_j \Delta BFR_{t-j} * SIZE_{it-1}$$

$$+ \sum_{j=1}^{l} \omega_j \Delta BFR_{t-j} * LIQUIDITY_{it-1}$$

$$+ \sum_{j=1}^{l} \varphi_j \Delta BFR_{t-j} * CAPITAL_{it-1}$$

$$+ \sum_{j=1}^{l} \kappa_j \Delta GDP_{t-1} + \sum_{j=1}^{l} \lambda_j \Delta PRICES_{t-1} + \upsilon_i + \varepsilon_{i,t} \tag{1}$$

where Δ is the first-difference operator, *FIN* is the Islamic banks financing, *GDP* is the logarithm of real GDP, *PRICES* is the logarithm of consumer price index, *BFR* is the Islamic financing rate, *SIZE, LIQUIDITY* and *CAPITAL* are the bank size, liquidity and capitalisation respectively. The subscript i denotes banks where $i = 1, …, N$; t denotes time where $t = 2006–2012$; υ_i denotes individual bank effects and $\varepsilon_{i,t}$ denotes error-term.

The choice of bank-specific characteristics is based on the theoretical assumption that a certain type of bank is expected to be more responsive to financing shocks since it operates in a dual banking system, and these characteristics are widely used in the empirical literature. Following Gambarcota (2005), the three measures for bank characteristics of size (*SIZE*), liquidity (*LIQUIDITY*) and capitalisation (*CAPITAL*) are defined as follows:

Size:

$$SIZE_{it} = \ln A_{it} - \frac{\sum_{i=1}^{N} \ln A_{it}}{N_T}$$

Liquidity:

$$LIQUIDITY_{it} = \frac{LA_{it}}{A_{it}} - \left(\sum_{t=1}^{T} \frac{\sum_{i=1}^{N} LA_{it} / A_{it}}{N_T} \right) / T$$

Capitalisation:

$$CAPITAL_{it} = \frac{K_{it}}{A_{it}} - \left(\sum_{t=1}^{T} \frac{\sum_{i=1}^{N} K_{it} / A_{it}}{N_T} \right) / T$$

Bank size (*SIZE*) is measured by the logarithm of total assets (*A*). Relatively, banks with a smaller size may face higher constraints in raising external funds, thus forcing them to reduce their lending (Kasyhap and Stein 1995, 2000). Liquidity (*LIQUIDITY*) is measured by the ratio of liquid assets (cash and short-term funds) to total assets (*LA*). More liquid banks can draw down on their liquid assets to shield their financing portfolios and are less likely to cut back on financing in the face of rising cost or rate of return. Capitalisation (*CAPITAL*) is measured by the ratio of capital and reserve to total assets (*K*). Since raising bank capital is costly, the bank tends to adjust the lending behaviour to meet the required level of capital. In the face of a rising rate of return, a bank's cost of financing rises while the remuneration of bank assets remains the same. Hence, the financing of highly-leveraged banks is expected to be more responsive to changes in the rate of return than the financing of well-capitalised banks (Kishan and Opiela 2006).

All three criteria are normalised with respect to their average (*NT*) across all the banks in the respective sample in order to get indicators that sum to zero over all observations. For the Eqation (1), the average of the interaction term ($\Delta BFR*SIZE$, $\Delta BFR*LIQUIDITY$ and $\Delta BFR*CAPITAL$) is, therefore, zero and the parameters are directly interpretable as the overall Islamic rate of return effect on Islamic bank financing. To remove the upward trend in the case of size (reflecting the fact that size is measured in nominal terms), or the overall mean in the case of liquidity and capitalisation, the bank characteristic variables are defined as deviations from their cross-sectional means at each time period.

The assumption is that small, less liquid and poorly capitalised banks react more strongly to changes in base financing rate. This would correspond to a significant

positive coefficient for the interaction terms $\Delta BFR*SIZE$, $\Delta BFR*LIQUIDITY$, and $\Delta BFR*CAPITAL$, and means that banks with these characteristics reduce their financing growth rate more strongly in response to a restrictive shock of base financing rate than do larger, more liquid and well-capitalised banks.

Since Islamic banks operate in the dual banking system, conventional interest rates may influence the Islamic bank financing behaviour. Equation (1) may represent the overall effect of Islamic bank financing without monetary policy. Huang (2003) argues that, under the conventional system, changes in interest rates have a larger effect on bank loans supplies because banks' ability to insulate their financing supplies from changes in monetary policy will be restricted, in particular, during periods of tight monetary conditions. We try to test this hypothesis for Islamic financing behaviour by including monetary policy rate, where MP is monetary policy shock proxy by overnight policy rate in Equation (2) and estimate the following model:

$$
\begin{aligned}
\Delta FIN_{it} &= \mu_i + \sum_{j=1}^{l} \beta_j \Delta BFR_{t-j} + \gamma_0 SIZE_{it-1} + \delta_0 LIQUIDITY_{it-1} \\
&\quad + \varphi_0 CAPITAL_{it-1} + \sum_{j=1}^{l} \gamma_j \Delta BFR_{t-j} * SIZE_{it-1} \\
&\quad + \sum_{j=1}^{l} \omega_j \Delta BFR_{t-j} * LIQUIDITY_{it-1} + \sum_{j=1}^{l} \varphi_j \Delta BFR_{t-j} * CAPITAL_{it-1} \\
&\quad + \sum_{i=1}^{l} \zeta MP_{t-j} + \sum_{i=1}^{l} \kappa_j \Delta GDP_{t-1} + \sum_{i=1}^{l} \lambda_j \Delta PRICES_{t-1} + \upsilon_i + \varepsilon_{i,t}
\end{aligned}
$$

$$(2)$$

5. Empirical results

Table 2 reports the results for our benchmark model of Islamic bank financing, while Table 3 to Table 4 report the results from fixed-effect and random-effect. The direct impact of changes in the base financing rate on bank financing is negative and significant. The coefficients for base financing rate range from 1.78 to 5.47, which means that an increase of base financing rate by one percentage point leads to a decrease in the bank financing in the range of between 1.7% to 5.5%. The result of our benchmark models in line with the basic theoretical prediction is similar to the bank lending channel of conventional banks (Ehrmann et al. 2003). Since the Islamic rate of return implicitly tracks interest rates offered by conventional banks (Chong and Liu 2009), the results also explain that the reduction in Islamic bank deposits may not be completely substituted by other forms of financing in order to continue to meet financing demand, thus leading to a reduction in Islamic bank financing. The results for fixed-effect and random-effect provide similar observations, albeit with a lower impact of base financing rate on bank financing between –0.21 to –1.76. The estimated regression equations for all models explain the behaviour of financing in the range of 30% - 97%. All diagnostic tests confirm the good fit of the models.

The results from Table 2 to Table 4 also show the importance of bank-specific characteristics with respect to the bank lending behaviour. The variable of $SIZE$ is positive and highly significant for all models. In the fixed-effect and random-effect model, $SIZE$ is positive and significant, ranging from 0.51 to 1.39. Larger banks might be more efficient due to scale economies, while the theoretical and empirical literature on the relationship between size and stability is ambiguous (Beck et al. 2013). This suggests that size is an important factor characterising the banks' financing reaction with large banks being expected to minimise cost. This finding is also consistent with Fadzlan and Zulkhibri (2009), who suggest that larger financial institutions in Malaysia attain a higher level of technical efficiency in their operations and exhibit an inverted U-shape behaviour.

In the case of the liquidity characteristic, the results show that the coefficient of $LIQUIDITY$ is positively associated and highly significant with bank financing, and is between 1.16 and 9.47. Only banks that have a larger share of liquid assets, or that are bigger, are able to shield their lending relationships. This evidence points to the fact that Islamic banks are able to protect their financing portfolios by drawing down on their liquid assets and are, therefore, less likely to cut on financing, whereas the latter have better access to external finance due to their size in order to retain their preferred liquidity ratio. This finding also implies that, in periods of rising base financing rate, a borrower from a less liquid bank, on average, tends to suffer from a sharp decline in financing more than does a customer of a more liquid bank. The result is in line with the findings by Brooks (2007) that liquidity is the main determinant explaining credit supply in Turkey.

Looking at the coefficient of capitalisation, $CAPITAL$, it appears that bank financing is positively associated with bank capitalisation, or the bank capital structure. The results suggest that market participants may perceive highly capitalised banks as being less risky (Kishan and Opiela 2000). Consequently, it should be more expensive for poorly-capitalised banks to finance externally. Such poorly-capitalised banks try to avoid the cost of falling below the regulatory minimum capital requirements or the increased risk of violating the capital requirement by holding capital buffers and asset buffers (short-term risk-weighted assets rather than customer financing) that can be liquidated if the bank runs into problems with the capital requirement. The more short-term risk-weighted assets (other than customer loans) the bank holds on its balance sheet (i.e., the higher the bank's asset buffer), the lower the risk of violating the capital requirements will be. The short-term risk-weighted assets will soon be liquid, thereby reducing the capital requirement in the near future. Also, the higher the bank's capital buffer, the lower the risk of violating the capital requirement will be.

The macroeconomic variables included in the bank financing models control for the demand-side effect, and only the real GDP growth variable is significant in the equation, where it has a positive coefficient. The response of credit to economic activity is consistent with expectation. The facts that the coefficient of real GDP is significant may imply that the economic activities are taken into account in financing decisions in an important way. On the other hand,

Table 2. OLS estimation: Islamic bank financing and characteristics models.

	Bank-specific characteristics					
$\Delta FINANCE_{it}$	*SIZE*	*SIZE*	*LIQUIDITY*	*LIQUIDITY*	*CAPITAL*	*CAPITAL*
ΔBFR_t	−1.841***	−1.787***	−3.156***	−3.509***	−4.363***	−5.478***
	(0.165)	(0.259)	0.272	0.516	(0.155)	(0.681)
Bank-specific char.						
SIZE	1.110***	1.113***	–	–	–	–
	(0.050)	(0.052)				
LIQUIDITY	–	–	2.282***	1.811***	–	–
			(1.827)	(1.924)		
CAPITAL	–	–	–	–	3.065***	2.887***
					(0.884)	(0.873)
Impact of BFR						
$\Delta BFRxSIZE$	−0.145***	−0.146***	–	–	–	–
	(0.021)	(0.021)				
$\Delta BFRxLIQUIDITY$	–	–	−4.591***	−4.489***	–	–
			(0.657)	(0.671)		
$\Delta BFRxCAPITAL$	–	–	–	–	−1.806***	−1.032***
					(0.550)	(0.542)
Impact of MP						
ΔON_t	–	0.053***	–	0.052***	–	1.237***
		(0.194)		(0.194)		(0.737)
Control Variables						
ΔGDP_t	1.495*	1.142*	6.227*	8.363*	8.636*v	9.778**
	(0.635)	(0.710)	(4.329)	(4.969)	(2.115)	(7.256)
$\Delta PRICES_t$	−1.311	−1.828	−6.205	−9.292	−2.899	−2.277
	(4.105)	(4.561)	(9.318)	10.106	(16.869)	(18.852)
R-square	0.848	0.848	0.332	0.341	0.771	0.664

Notes: Standard errors are reported in parenthesis. Standard errors and covariances are White-heteroskedasticity-consistent. The subscript *i* denotes banks and the subscript *t* denotes time, where *t* = 2006–2012. Bank-specific characteristics: *SIZE* is defined as logarithm of total asset; *LIQUIDITY* is defined as ratio of liquid asset (interbank deposits and securities); *CAPITAL* is defined as capital and reserves to total assets; BFR_t is the base financing rate; MP_t is the overnight interest rate; GDP_t is the logarithm of real GDP; $PRICES_t$ is the logarithm of consumer price index; *significant at 10%, **significant at 5%, and ***significant at 1%.

the price variable is negatively related to bank financing, but is insignificant. The rise in inflation may be associated with the variability of the inflation rate and will generate uncertainty about the future return on investments. This, in turn, discourages firms from undertaking investments which, consequently, reduces their financing demand. However, the price variable is insignificant for the results of all regressions.

Due to the potential interrelations between bank financing and conventional interest rate, all bank financing models are run with overnight policy rate (*ON*). The coefficients in all regressions are negatively related to bank financing and vary within a reasonable magnitude (0.05 to 0.52), but are broadly lower than the base financing rate. The results of these regressions suggest that the reaction of banks to changes in interest rates remains the same as the change base financing rate and is robust in terms of a different type of econometric

specifications. This finding broadly supports the findings by Chong and Liu (2009), Cervik and Charap (2011), and Beck et al. (2013) that there is no significant difference in bank financing behaviour with respect to interest rates. Furthermore, Kasri and Kassim (2009) confirm that the conventional interest rate is one of the determinants for saving deposits in Indonesia. This evidence explains why the bulk of Islamic bank financing is based on the mark-up principle and is very debt-like in nature (i.e. murabaha and ijarah), rather than using the principle of PLS. Despite their operations being different from those of conventional banks, Islamic banks seem to face asymmetric information, severe adverse selection and moral hazard problems similar to those of their counterparts in their attempts to provide funds to entrepreneurs. However, the use of debt-like instruments is a rational response on the part of Islamic banks to informational asymmetries in the environments in which they operate.

Table 3. Fixed effect estimation: Islamic bank financing and characteristics models.

$\Delta FINANCE_{it}$	Bank-specific characteristics					
	SIZE	SIZE	LIQUIDITY	LIQUIDITY	CAPITAL	CAPITAL
ΔBFR_t	−0.208***	−0.294***	−0.470***	−1.764***	−0.820***	−0.339***
	(0.128)	(0.194)	(0.415)	(0.516)	(0.171)	(0.186)
Bank-specific char.						
SIZE	0.595***	0.508**	–	–	–	–
	(0.036)	(0.554)				
LIQUIDITY			1.792***	1.161**	–	–
	–	–	(1.894)	(0.815)		
CAPITAL	–	–	–	–	6.067**	8.815**
					(2.354)	(2.526)
Impact of BFR						
$\Delta BFRxSIZE$	−0.222**	−0.021**	–	–	–	–
	(0.010)	(0.159)				
$\Delta BFRxLIQUIDITY$	–	–	−1.605**	−1.458*	–	–
			(0.511)	(1.108)		
$\Delta BFRxCAPITAL$	–	–	–	–	−3.011**	−3.671**
					(1.599)	(1.335)
Impact of MP						
ΔON_t	–	−0.043***	–	−0.528*	–	−0.368**
		(0.017)		(0.317)		(0.169)
Control Variables						
ΔGDP_t	1.193*	1.538*	5.170*	5.021*	5.386**	8.222**
	(0.746)	(1.207)	(3.116)	(3.410)	(2.494)	(4.319)
$\Delta PRICES_t$	−0.844	−0.357	−0.361	−0.305	−0.980	−0.229
	(2.197)	(2.385)	(7.153)	(7.446)	(7.967)	(9.035)
Constant	7.588***	8.784	10.902***	19.164***	18.058***	17.516***
	(0.357)	(7.917)	(0.937)	(16.003)	(2.494)	(2.553)
Firm Dummy	Yes	Yes	Yes	Yes	Yes	Yes
R-square	0.972	0.972	0.738	0.751	0.735	0.743
F-statistic	72.29	66.77	5.989	5.856	5.231	4.995

Notes: Standard errors are reported in parenthesis. Standard errors and covariances are White-heteroskedasticity-consistent. The subscript i denotes banks and the subscript t denotes time, where $t = 2006–2012$. Bank-specific characteristics: SIZE is defined as logarithm of total asset; LIQUIDITY is defined as ratio of liquid asset (interbank deposits and securities); CAPITAL is defined as capital and reserves to total assets; BFR_t is the base financing rate; MP_t is the overnight interest rate; GDP_t is the logarithm of real GDP; $PRICES_t$ is the logarithm of consumer price index; *significant at 10%, **significant at 5%, and ***significant at 1%.

To analyze further the impact of banks reducing their bank financing in response to a change in base financing rate with respect to specific characteristics, we have interacted the base financing rate variable with bank size ($\Delta BFR*SIZE$), liquidity ($\Delta BFR*LIQUIDITY$) and capitalization ($\Delta BFR*CAPITAL$); this is to investigate the economic arguments that there is a unique role for Islamic banks in the dual banking system, and the importance of heterogeneity among banks. Tables 2, 3 and 4 also report the results of the base financing rate with respect to bank-specific characteristics for bank financing using a fixed-effect and random-effect model. The estimates of bank-specific characteristics coefficients provide interesting results. The estimate coefficients of BFR*LIQUIDITY, BFR*CAPITAL and BFR*SIZE consistently show a positive sign, and are highly significant at the conventional level. These results suggest that banks' lending and their ability to obtain other sources of funding are factors that are affected indirectly through bank-specific characteristics.

In summary, we find strong evidence of the asymmetric adjustment of bank financing through bank-specific characteristics, as reported in the literature for conventional banks and in line with the arguments of Kashyap and Stein (1995, 2000) and Kishan and Opiela (2000). Moreover, banks react differently to the base financing rate depending on their own specific characteristics; a bank with higher capitalisation, in particular, is expected to increase financing more than a bank with greater size and liquidity. Furthermore, since an Islamic bank is operating in a dual

Table 4.   Random effect estimation: Islamic bank financing and characteristics models.

$\Delta FINANCE_{it}$	Bank-specific characteristics					
	SIZE	*SIZE*	*LIQUIDITY*	*LIQUIDITY*	*CAPITAL*	*CAPITAL*
ΔBFR_t	−0.368***	−0.324***	−0.452***	−0.334***	−0.377***	−0.371***
	(0.028)	(0.025)	(0.214)	(0.215)	(0.142)	(0.105)
Bank-specific char.						
SIZE	0.618***	1.399***	–	–	–	–
	(0.035)	(0.496)				
LIQUIDITY	–	–	9.471***	4.639**	–	–
			(1.805)	(2.858)		
CAPITAL	–	–	–	–	7.307***	8.521***
					(2.284)	(2.331)
Impact of BFR						
ΔBFRxSIZE	−0.221**	−0.244**	–	–	–	–
	(0.010)	(0.143)				
ΔBFRxLIQUIDITY	–	–	−1.539***	−0.189***	–	–
			(0.102)	0.075		
ΔBFRxCAPITAL	–	–	–	–	−3.406***	−3.667**
					(1.129)	(1.777)
Impact of MP						
ΔON_t	–	−0.041**	–	−0.472**	–	−0.323***
		(0.021)		(0.231)		(0.036)
Control Variables						
ΔGDP_t	1.222*	1.423*	5.365*	9.664*	6.131*	8.530*
	(0.842)	(1.112)	(4.104)	(4.380)	(3.517)	(5.198)
$\Delta PRICES_t$	−0.657	−1.394	−0.698	−0.808	−3.444	−5.773
	(2.191)	(0.502)	(7.112)	(7.406)	(2.066)	(8.947)
Constant	7.101***	4.052	10.873***	13.830	17.810***	17.412
	(0.346)	(7.067)	(0.861)	(14.852)	(2.297)	(2.340)
Firm Dummy	Yes	Yes	Yes	Yes	Yes	Yes
R-square	0.908	0.904	0.394	0.413	0.400	0.409
F-statistic	93.58	72.83	6.256	5.515	5.455	4.968

Notes: Standard errors are reported in parenthesis. Standard errors and covariances are White-heteroskedasticity-consistent. The subscript *i* denotes banks and the subscript *t* denotes time, where $t = 2006–2012$. Bank-specific characteristics: *SIZE* is defined as logarithm of total asset; *LIQUIDITY* is defined as ratio of liquid asset (interbank deposits and securities); *CAPITAL* is defined as capital and reserves to total assets; BFR_t is the base financing rate; MP_t is the overnight interest rate; GDP_t is the logarithm of real GDP; $PRICES_t$ is the logarithm of consumer price index. *significant at 10%, **significant at 5%, and ***significant at 1%.

banking system, the asymmetric information problems faced by Islamic banks are expected to affect the ability to protect the financing lines from policy-induced reductions in deposits, and result in Islamic bank financing behaviour.

6. Conclusion

A significant number of empirical studies have explored the bank lending behaviour of conventional banks over the past decades, while studies on Islamic bank financing behaviour remain scarce due to lack of bank-level data. Under the dual banking system, to the extent that financial constraints vary with banks' ability to access other sources of financing, the implication is that Islamic bank financing responses to the bank financing rate and the conventional interest rate are contingent on observable bank-specific characteristics. Understanding this mechanism is crucially important, in the context that Islamic banks have increasingly played a dominant role in the Malaysian financial system.

This paper analyses the importance of bank-specific characteristics with respect to Islamic bank financing in Malaysia. The results obtained from pooled panel estimation allow us to draw several significant conclusions about Islamic bank financing behaviour in Malaysia within a dual banking system. The evidence gathered in this study suggests that bank-specific characteristics are important for Islamic banking financing behaviour. The financing behaviour of Islamic banks is consistent with the behaviour of conventional banks in that the bank lending operates

according to banks' size, and level of liquidity and capital (Goldniuk 2006). The results of these regressions also suggest that the reaction of Islamic banks financing to changes in interest rates is the same as for conventional banks, and are robust to different types of econometric specifications.

Many problems and challenges relating to Islamic instruments, financial markets, and regulations must be addressed and resolved. A complete Islamic financial system with its identifiable instruments and markets is still at a relatively early stage of evolution. The functioning of Islamic banks should rapidly differentiate itself from conventional banking. Due to the existence of moral hazards and adverse selection in the industry, an Islamic bank is not able to provide a full-fledged alternative finance to conventional finance. Moreover, an Islamic bank does not develop in the path that was envisioned by the Islamic scholars (Saeed 1996). One of the drawbacks is the low level of participation in PLS arrangements, which seems contradictory to the essential concept of Islamic banking. In practice, it would beneficial for Islamic banks to stop replicating the conventional banking models that concentrate mainly on debt-based instruments and mark-up models, but instead to move over to the PLS model.

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